

a small experimental garden, but the above-mentioned plants should be credited to the early white settlers. For forest planting the Japanese have introduced, from Honolulu, I believe, *Casuarina equisetifolia* Forst. and have also planted *Acacia confusa* Merrill, *Pinus luchuensis* Mayr and *Ficus elastica* Roxb. To their temple ground the Japanese priests have introduced *Ficus pumila* L. and *Buxus liukiensis* Mak.

For native plants which the original white settlers found useful or interesting they most naturally coined names, and these are given in Robertson's paper already mentioned on page 100. To aid in the identity of these I was fortunate enough to enlist the services of the Rev. J. Gonzales who has known the plants by their vernacular names from his childhood. He procured me specimens of all but one or two, and the list of these with their scientific names may fitly conclude this sketch of the ligneous flora of the interesting Bonin Islands.

- Axe-handle-wood (*Raphiolepis integerrima* Hook. & Arn.)
- Cedar (*Melia Azedarach* L.)
- Hao-wood, Mountain (*Hibiscus tiliaceus* var. *glabra* Matsum.)
- Hao-wood, Narrow leaf (*Raphiolepis integerrima* Hook. & Arn.)
- Hao-wood, Soft (*Hernandia peltata* Meisn.)
- Hao-wood, Swamp (*Hibiscus tiliaceus* L.)
- Iron-wood, Black (*Sideroxylon ferrugineum* Hook. & Arn.)
- Iron-wood, Red (*Eugenia oxygona* Koidz.)
- Iron-wood, White (*Putranjiva integerrima* Koidz.)
- Kehop (*Crinum asiaticum* L.)
- Milk-wood (*Ficus boninsimae* Koidz.)
- Mulberry (*Morus boninensis* Koidz.)
- Plum, Wild (*Osteomeles anthyllidifolia* Lindl.)
- Poison-wood (*Zanthoxylum ailanthoides* var. *inerme* Rehd. & Wils.)
- Rose-wood (*Schima boninensis* Nakai)
- Sage tree, Wild (*Vitex ovata* Thunb.)
- Sassafras (*Cinnamomum scrobiculatum* Nakai)
- Shaddock (*Elaeocarpus photiniaefolius* Hook. & Arn.)
- Spruce (*Juniperus taxifolia* Hook. & Arn.)
- Tea-wood tree (*Cinnamomum scrobiculatum* Nakai)
- Tremona or Tomana-wood tree (*Calophyllum Inophyllum* L.)
- White Oak-wood (*Ardisia Sieboldii* Miq.)
- Yellow-wood (*Paralstonia clusiacea* Baill.)

NEW WOODY PLANTS FROM THE BONIN ISLANDS

ALFRED REHDER AND E. H. WILSON

Cyphokentia Savoryana, sp. nov. — *Ptychosperma elegans* Hattori in Jour. Coll. Sci. Tokyo, xxiii. art. 10, 22, 44, t. 2, fig. 1¹ (1908), non Blume.

Arbor ad 16 m. alta, trunco annulato laevi, circiter 0.5 circuitu, glabra paleis rufis foliorum erumpentium cito caducis exceptis. Folia paripinnata,

¹ The explanations to plates 2 and 4 have been interchanged.

circiter 12, erecto-patentia vel patentia, leviter arcuata, pinnis pendentibus, 1-3 m. longa; pinnae utrinque 50-60 (in planta juniore pauciora et partim confluentia), anguste lanceolata, ensiformia, apicem versus sensim angustata, 35-55 cm. longa et 2.5-3 cm. lata, basin versus leviter angustata et interstitiis 2-3 cm. latis separata, pleraque nervis 3 conspicuis instructa; petiolus 45-60 cm. longus, supra canaliculatus, inermis, basi in spatham circiter 70 cm. longam truncum amplectentem dilatatus. Flores monoeci, in spadice paniculato infrafoliaceo ante anthesin in spathis 2 concavis, dein deciduis circiter 70 cm. longis et una circiter 12 altera 20 cm. latis incluso, spiraliter dispositi satis approximati, bracteis latis brevibus abrupte acuminulatis ciliolatis apice longe sparse pilosis et bracteolis minutis suffulti, ut videtur terni, medius femineus, laterales masculi vel axium apicem versus omnes masculi (masculi in specimine praestante paucissimis exceptis decidui, ideoque spadix totus femineus videtur); panicula ampla, ramis patentibus axi angulato; axes tertii ordinis distiche dispositi, 30-40 cm. longi, compressi et leviter flexuosi, simplices vel inferiores bifurcati. Flores masculi: sepala 3, imbricata et plus minusve connata, triangulari-ovata, obtusiuscula, alato-carinata, scariosa, petalis duplo breviora; petala 3, valvata, oblongo-ovata, acutiuscula, 5 mm. longa; stamina 6, petalis paullo breviora, filamentis filiformibus basin versus paullo incrassatis, antheris oblongis 2 mm. longis sagittatis dorsifixis versatilibus; rudimentum ovarii filamentis paullo brevius, apice trifidum. Flores feminei: sepala imbricata, orbiculari-ovata, obtuse apiculata, 3 mm. longa, chartacea; petala imbricata, orbiculari-ovata, obtuse minute apiculata, 4 mm. longa, tenuiora; staminodia desunt; ovarium oblique ovoideum, stigmatibus 3 lateralibus, brevibus latisque, uni-ovulatum; ovulum parietale, pendulum. Inflorescentia fructifera pendula, satis dense fructibus instructa; fructus ovoidei, 1.2 cm. longi et 6-7 cm. diam., nigri, leviter pruinosi, infra apicem rudimento stigmatum valde laterali instructi et apiculati, basi perianthio persistente vix incrassato suffulti; pericarpium crassiusculum; semen ovoideum, facie ventrali leviter applanatum, 7 mm. longum et 5 mm. diam., fusco-brunneum, rapheos ramis a hilo ascendentibus et sparse anastomosantibus et ad situm embryonis convergentibus in testam impressis; albumen corneum, aequabile; embryo basilaris.

BONIN ISLANDS: Mukō-jima, sea-level to 250 m. alt., April 28, 1917, *E. H. Wilson* (No. 8334, type); Chichi-jima, sea-level to 250 m. alt., April 22, 1917, *E. H. Wilson* (No. 8212).

This graceful and handsome Palm agrees well in its generic characters with *Cyphokentia*, though it is geographically far removed from the other species of the genus which are all endemic to New Caledonia. It is still quite common in the more sheltered places on all the larger islands of the Bonin group and especially on Ani-jima. From a distance old trees resemble the Cocoanut in appearance with their spreading and arching leaves, but the leaves are smaller. It was the presence of this Palm and fresh water that made the Islands famous resorts for the old whaling ships. It is the "Arrack-tree" of Kaempfer and the "Areca oleracea" of Captain Beechey;

von Kittlitz refers to it (Twenty-four views Veget. Pacif. 48) as "the slender growing Areca." In the published accounts of the Islands this Palm is frequently mentioned; and since it proves to be peculiar to the Bonins, it appears to be most fitting that we should associate with it the name of one of the pioneers and chief founder of the settlement of Bonin Islands — Nathaniel Savory.

Ficus Iidaiana, sp. nov.

Arbor tenuis, sparse ramosa, ad 8 m. alta, trunco 0.3 m. circuitu; rami rubro-brunnei; juniores adpresse canescenti-pubescentes pilis longioribus villosis intermixtis. Folia membranacea, longe petiolata, ovata, subito breviter acuminata, basi rotundata vel subcordata, 7–15 cm. longa et 5–11 cm. lata, margine leviter undulata, supra saturate viridia, initio adpresse pubescentia, mox glaberrima, subtus pallide viridia, sparse et minute ad costam et venas densius puberula, utrinque nervis 5–7 erecto-patentibus secus marginem curvatis et anastomosantibus; petioli 3.5–7 cm. longi, minute adpresse pubescentes; stipulae membranaceae, ovato-lanceolatae, acuminatae, 1.5–2 cm. longae et 5–8 mm. latae. Receptacula axillaria, solitaria vel bina, pedunculo 1.5–3 cm. longo pubescenti, obovoidea vel ellipsoidea, 2–2.5 cm. longa et circiter 1.5 cm. diam., pleraque basi in stipitem ad 1 cm. longum contracta, minute adpresse pubescentia, basi bracteis 3 membranaceis late ovatis acutis 2–3.5 mm. longis instructa; flores masculi, feminei et galliferi in eodem receptaculo; flores masculi perianthio 4-fido; segmenta oblongo-lanceolata, obtusa vel acutiuscula, brunnea; stamina 2, raro 3 vel 1, segmentis breviora vel subaequilongia, antheris quadrangularelipsoideis quam filamenta longioribus vel rarius subaequilongis; flores feminei, ut videtur, immaturi, segmentis 3–4 anguste lanceolatis; stylus lateralis ovario brevior, stigmatibus obliquo acuto interdum leviter et inaequaliter bilobo; flores galliferi segmentis 3–4 inaequalibus lanceolatis ovarium late obovoideum paullo superantibus vel brevioribus, rudimento styli laterali. Fructus maturus ignotus.

BONIN ISLANDS: Haha-jima, Sekimonzan, alt. 300 m., April 26, 1917, *E. H. Wilson* (No. 8310).

A remarkably distinct species belonging to the section *Eusyke* and not closely related to any species known to us; well characterized by its leaves and by its relatively large and long-peduncled receptacle. It is apparently rare, for I saw it only on Sekimonzan.

It is named for Mr. S. Iida of Yokohama, Japan, my friend and genial traveling companion to the Bonin Islands. E. H. W.

Calpidia Nishimurae, comb. nov. — *Pisonia Nishimurae* Koidzumi in Tokyo Bot. Mag. xxxiii. 120 (1919).

BONIN ISLANDS: *M. Yai* and *S. Nishimura* (type), ex Koidzumi; Haha-jima, common, Sekimonzan, alt. 0–500 m., April 26, 1917, *E. H. Wilson* (No. 8311; tree 10–25 m. tall, 2–8 m. in girth).

As we are following Heimerl (in Oestr. Bot. Zeitschr. LXIII. 279 [1913]) in

considering *Calpidia* Du Petit-Thouars a distinct genus, we have to refer Koidzumi's species which is apparently very near *C. excelsa* (Bl.) Heimerl to that genus.

Evodia Kumagaiana, sp. nov. — *Evodia triphylla* Hattori in Jour. Coll. Sci. Tokyo, XXIII. art. 10, 28 (1908), non De Candolle.

Frutex 2-4-metralis, ramosissimus, glaber, ramis crassis subteretibus, cortice laevi rubro-brunneo striis pallide cinereis notato, ligno denso. Folia trifoliolata, coriacea, persistentia; foliola petiolulata petiolulis 0.5-2.5 cm. longis, medio lateralibus paullo longiore, supra canaliculatis, obovata vel elliptica vel oblongo-obovata, apice rotundata et saepissime emarginata, basi cuneata et saepe obliqua, 3-10, pleraque 6-9 cm. longa, et 1.5-4.5 cm. lata, integra, supra luteo-viridia, lucida, subtus opaca, minute glanduloso-punctulata, nervis utrinsecus 7-10 sub angulo fere recto divergentibus; petioli 2-7 cm. longi, subteres. Inflorescentia axillaris, paniculata, pedunculo crasso 0.5-2 cm. longo glabrescenti incluso 2-6 cm. longa et 2-3 cm. lata, axibus crassiusculis floribusque tomento velutino brevi cinereo-flavescente obtectis; flores 4-meri, unisexuales, albidi, circiter 5 mm. diam., brevissime pedicellati, bracteis bracteolisque triangularibus acutiusculis minutis suffulti. Flores masculi: sepala semiorbicularia, 1 mm. longa et 1.5 mm. lata, basi decurrentia; petala patentia, ovata, 3 mm. longa, acutiuscula, extus velutina, intus fere glabra, glanduloso-punctulata; stamina erecta, petala aequantia, filamentis subulatis glabris, antheris subglobosis; rudimentum ovarii dense tomento velutino fusco-flavescenti obtectum. Flores feminei (deflorati tantum visi) similes, sed sepala ovata, acutiuscula, vix 1 mm. longa et paullo angustioribus; staminodia pistillum superantia, antheris sterilibus; pistillum dense velutinum, stylo brevi piloso, stigmate capitato. Fructus desideratur.

BONIN ISLANDS: Ani-jima, thickets, alt. 100-200 m., May 3, 1917, *E. H. Wilson* (No. 8370).

This species belongs to the section *Lepta*, subsect. *Trifoliolatae* Engler and has been confused by Japanese botanists with *E. triphylla* De Candolle which, however, is easily distinguished by its thin acuminate leaves and glabrous ovary; from the species with coriaceous leaflets known to us, as *E. acuminata* Merrill, *E. benguetensis* Elmer, *E. Kingii* Engler, *E. pachyphylla* King, *E. retusa* Merrill and *E. robusta* Hooker f., it differs in its emarginate leaflets, small paniculate inflorescence, velutinous petals and in its densely tomentose ovary.

Evodia Kumagaiana is fairly common on Ani-jima, but I did not see it elsewhere. It is named for Mr. Y. Kumagai, Okitsu Experimental Station, Shizuoka-ken, who was detailed by the Japanese Government to accompany me to the Bonin Islands, in appreciation of many valued services.

E. H. W.

Zanthoxylum ailanthoides Sieb. & Zucc. var. *inerme*, var. nov. — *Zanthoxylum ailanthoides* Hattori in Jour. Coll. Sci. Tokyo, XXIII. art. 10, 28 (1908), non Siebold & Zuccarini.

A typo recedit defectu aculearum, omnibus partibus plantae aculeis omnino destitutis.

BONIN ISLANDS: Haha-jima, woods and thickets, alt. 100–400 m., April 29, 1917, *E. H. Wilson* (No. 8265, type; tree 8–16 m. tall; leaves and old fruits); Chichi-jima, without precise locality *H. Otomo* (flowers).

By Japanese botanists this tree has been referred to *Zanthoxylum ailanthoides* Sieb. & Zucc. which, however, is easily distinguished from it by the prickles on the trunk, the branches, and often on the leaf-rhachis. The Bonin form is without prickles on any of its parts, but in all other characters it agrees perfectly with the typical form as we know it from Japan and Korea. It is common on all the larger islands and emits a very strong rue-like odor. The Bonin Islanders call it Poison-wood tree and use its wood in making the hulls of their canoes.

Symplocos Otomoi, sp. nov.

Frutex glaberrimus, sepalis et petalis ciliolatis exceptis; rami juniores crassiusculi alato-angulati, flavidi, vetustiores acute angulati. Folia crasse coriacea, ad tertium annum persistentia, breviter petiolata, elliptica vel ovato-elliptica, apice rotundata vel retusa, basi late cuneata, 2–4 cm. longa et 1–2.5 cm. lata, margine integra, valde revoluta, supra laete luteo-viridia, nitentia, rugosa, subtus pallidiora, costa supra impressa, subtus elevata, nervis utrinsecus circiter 6, supra impressis, subtus obsolete; petioli 2.5 cm. longi, alati. Flores 0.8–1 cm. diam., subsessiles, in racemis axillaribus vix 1 cm. longis densis circiter 5-floris; bracteae ovatae, 1.5–3 mm. longae; calyx 3–3.5 cm. longus, lobis late ovatis vel semiorbicularibus rotundatis circiter 2 mm. longis et latis ciliolatis in tubum brevem vix aequilongum connatis; petala calycem duplo superantia, elliptica, leviter concava, obtusa, 5–6 mm. longa et 3–3.5 mm. lata, ciliolata; stamina manifeste pentadelphica, circiter 75, longiora petala subaequantia, filamentis filiformibus glabris, antheris suborbicularibus; stylus brevis, 1.5 mm. longus, glaber, sulcatus, stigmatibus 3 parvis leviter divergentibus; ovarium triloculare, apice leviter pubescens.

BONIN ISLANDS: Chichi-jima, without precise locality, *H. Otomo*.

A very distinct species characterized by its small crowded rugose obtuse or emarginate leaves and winged shoots. It seems most closely related to *S. crassifolia* Benth. and to *S. lucida* Sieb. & Zucc., but these are both easily distinguished by the acute or acuminate leaves smooth above, serrate in *S. lucida*, and by the stamens exceeding the petals and fewer, 30–60, in number, and by the less winged shoots.

I take pleasure in associating this new species with Mr. Hidemasa Otomo, Forestry officer for the Bonin Islands, to whom I am indebted for the specimen and whose knowledge of the flora and energetic help did so much toward making my visit to the Bonin Islands a pleasant and successful one.

E. H. W.

Symplocos boninensis, sp. nov.

Arbor 3–6-metralis, trunco 0.3–0.5 m. circuitu, ramosissima, omnino

glabra, pilis paucis mox deciduis in apice foliorum et in apice gemmarum et florum partibus ciliolatis exceptis; rami hornotini praesertim apicem versus angulati, annotini teretes, ut hornotini plerumque virides, vetustiores brunneo-fusci. Folia coriacea, per duos vel tres annos persistentia, longe petiolata, elliptica vel elliptico-ovata vel oblongo-ovata, rarius obovata, rotundata vel emarginata, rarius obtusiuscula et mucronulata, basi cuneata, 1.5–9 cm., pleraque 5–8 cm. longa et 0.5–4.5, pleraque 2–4 cm. lata, margine leviter undulata et glandulis minutis remotis caducis instructa, supra luteo-viridia, nitentia, subtus paullo pallidiora et opaca, nervis utrinsecus 5–6 ut costa subtus et supra leviter elevatis, venulis obsoletis; petioli crassiusculi, 1.5–3 cm. longi, supra applanati, apicem versus lamina decurrente marginata. Flores albi, axillares, 1–3, 0.8–1 cm. diam.; pedunculus floris centralis 3–5 mm. longus, bracteis pluribus rotundatis 2.5–3.5 mm. longis viridibus minute puberulis ciliolatis obtectus, plerumque 1 vel 2 flores laterales gerens; calyx 4–5 mm. longus, lobis ovatis ciliolatis quam tubus longioribus; petala obovata, concava, 5 mm. longa et 2.5–3 mm. lata, ciliolata; stamina pentadelphica, 90–100, longiora petalis paullo longiora, filamentis glabris; stylus 4 mm. longus, triangularis, stigmatibus 3 minutis; ovarium 3-loculare, apice pubescens. Fructus solitarius, oblongo-ellipsoideus, circiter 1.6 cm. longus, 1 cm. diam., calyce persistente coronatus, pedunculo brevi dense bracteato suffultus.

BONIN ISLANDS: Mukō-jima, woods, alt. 50–100 m., April 28, 1917, *E. H. Wilson* (No. 8336, type); Chichi-jima, Hatsune-yama, *H. Otomo*.

A well-marked species characterized by its leaves, the 1–3-flowered inflorescence and by the large fruit. It appears related to *S. lucida* Sieb. & Zucc. which has smaller serrate leaves, shorter petioles, fascicled flowers and smaller fruit. This new species is common on Mukō-jima, but Wilson did not see it elsewhere. The Chichi-jima specimen from the herbarium of Mr. Otomo looks quite different at first sight with its slenderer branchlets, smaller obovate to oblong-obovate leaves, but on critical examination we are satisfied that it belongs to the same species and is from a weak branch.

Lobelia boninensis Koidzumi in Matsumura Icon. Pl. Koisikav. II. 19, t. 94 (1914).

Suffrutex 1–2 m. altus, glaber, monocarpicus, caule crasso glabro circiter 3 cm. diam., in parte superiore medulla ampla alba repleto, in parte inferiore fistuloso, cortice albido foliorum cicatricibus triangularibus vel semi-orbicularibus conspicuis 0.8–1.4 cm. diam. notato. Folia numerosissima, basalia conferta oblanceolata-oblonga vel lanceolato-oblonga, subito acutata, 8–20 cm. longa et 2–3.5 cm. lata, basi in petiolum circiter 1 cm. longum alato-marginatum contracta, remote et sparse crenato-serrata, supra laete viridia, nitentia, subtus pallidiora, glabra, utrinque nervis 12–18 supra leviter impressis subtus elevatis ante marginem anastomosantibus, caulina sparsa, ligulata, 30–35 cm. longa et 3–3.5 cm. lata, sensim in petiolum alatum angustata, nervis fere duplo numerosioribus, ceterum ut basalia. Inflorescentia terminalis paniculata pubescens, e racemis 40–50 cm. longis compo-

sita; flores non visi. Capsula ovoidea vel ellipsoidea 1.4 cm. longa et 5 mm. lata, pedicello circiter 1 cm. longo pubescente erecto, 10-costata costis anguste alatis, calycis lobis coronata.

BONIN ISLANDS: Mukō-jima, sea-level to 200 m. alt., April 28, 1917, *E. H. Wilson* (No. 8343, type); Chichi-jima, cliffs, sea-level to 200 m. alt., common, April 23 1917, *E. H. Wilson* (No. 8277).

This very interesting addition to the flora of eastern Asia is fairly common in open grassy places on all the islands which Wilson visited, and it seems strange that it should have remained without a name. It had been apparently first found by C. Wright according to a statement by Hillebrand in his *Flora of the Hawaiian Islands*, p. 237 (1888), who mentions under *Lobelia Gaudichaudii* De Candolle a specimen collected by Wright on the Loo-choo Islands (apparently a mistake for Bonin Islands, for there is no such *Lobelia* known from the Liukiu Islands) and says that it resembles the present species (*L. Gaudichaudii*) greatly and that it is preserved in the Harvard Herbarium, but there is now no *Lobelia* from the Bonin Islands in the Gray Herbarium and none is mentioned in Dr. Gray's manuscript list of Bonin and Loo-choo plants. Our new species is undoubtedly near *L. Gaudichaudii*, but that species has sessile leaves with a broad base and a conspicuous row of resinous glands on the margins.

At the last moment, when this article was already in press, we discovered that Koidzumi had described and figured this *Lobelia* which we had supposed to be an undescribed species in Matsumura's *Icones Plantarum Koisikavenses*.

NEW SPECIES, VARIETIES AND COMBINATIONS FROM THE HERBARIUM AND THE COLLECTIONS OF THE ARNOLD ARBORETUM¹

ALFRED REHDER

FAGACEAE

Castanopsis Spach

IN the limitation of this genus I am following Schottky and unite the section *Chlamydobalanus* Endlicher (sub *Quercu*; Oersted sub *Pasania*) with *Castanopsis*. From *Castanea* the genus is easily distinguished by the evergreen often entire leaves. From *Lithocarpus* it differs in the thin cupula usually enclosing the nut entirely and splitting at maturity to liberate it; the cupula is furnished with spines or tubercles arranged in usually oblique zones, it is never covered by closely imbricate scales nor by concentric distinct rings; the number of flowers varies from 3-1 in a cupula. The leaves are usually distichously arranged.

Castanopsis acuminatissima, comb. nov. — *Quercus lineata* Miquel, Pl. Junghuhn. i. 10 (1850), non Blume. — *Castanea acuminatissima* Blume, Mus. Bot. Lugd.-Bat. i. 283 (1850). — *Quercus fagiformis* Junghuhn in

¹ Continued from p. 60.